REMARKS

Applicant has cancelled Claims 1-24 without prejudice.

The newly drafted claims are supported by our specification and reference can be made to Figure 1 wherein our electrical/optical conversion unit 102, the optical frequency conversion unit 202 and the balanced optical/electrical conversion unit 203 are defined, to constitute the optical transmission system.

The new Claim 26 is based on, for example, the description in the item (1) in Section "1.2 Structure of the optical receiver 20" in the Specification.

New Claim 27 is equivalent to the original Claims 10 and 11, and is based on Figure 9 and the description in the item (1) in the Section "3. Other modifications."

The new Claim 28 is based on Figure 2.

Finally, new Claims 29-32 are method claims corresponding to the new Claims 25-28 respectively.

The present invention provides an optical transmission system that includes an optical transmitter and an optical receiver, in which the optical transmitter transmits an intermediate-frequency optical signal modulated based on an intermediate-frequency electrical signal to be transmitted, and the optical receiver generates two optical signals having a radio frequency by converting the frequency of the received intermediate-frequency optical signal to a radio frequency by using the frequency converter. The radio-frequency components of the two optical signals are in antiphase, and the noise components of the two optical signals are in phase. Using the balanced optical/electrical converter, the optical receiver converts the two optical signals into electrical signals respectively, and inverts the phase of the one of the two optical signals and

adds the inverted one to the other. Thus, the optical receiver obtains a radio-frequency electrical signal in which the noise components have been cancelled out.

The Final Office Action had rejected our invention over *Chew et al.* (U.S. Patent No. 7,260,330) in view of either *Trinh* (U.S. Patent No. 6,822,743) or *Kersey et al.* (U.S. Patent No. 5,410,404).

Chew et al. discloses an "interferometer" that inputs an optical signal to either one of two photodetectors depending on whether or not consecutive two bits of a received optical signal have the same polarity. According to *Chew et al.*, a "High" optical signal is input to one of the photodetectors, and a "Low" optical signal is input to the other one of the photodetectors.

However, regarding the two optical signals generated by the frequency converter according to the present invention, the intensity-modulated components having the radio frequency are in antiphase. According to *Chew et al.*, a signal input for a bit and a signal input for the next bit are in antiphase. That is, the signals in antiphase are completely different from those targeted by the present invention.

Thus, the *Chew et al.* reference cannot generate a high quality radio-frequency electrical signal in which the noise components have been cancelled out. Basically, *Chew et al.* does not address any issue of a use of an optical fiber between the transmitter and the receiver. The *Trinh* and *Kersey et al.* references were cited to modify the *Chew et al.* reference, to disclosed first and second optical transmission lines for connecting two optical signals to dual detectors in the optical receiver, and more particularly for using a pair of optical fibers in Figure 7 of *Trinh* for connecting the photo detectors 715 and 716 and a pair of optical fibers 52 and 54 in the *Kersey et al.* reference in Figure 1 for connecting the respective couplers 22 and 24 to the photo detectors 72 and 74.

However, the *Trinh* reference does not disclose or suggest the frequency converter and the balanced optical/electrical converter of the present invention. Additionally, *Kersey et al.* does not disclose or suggest a frequency converter nor a balanced optical/electrical converter of the present invention.

The optical receiver in the optical transmission system of the present invention includes a frequency converter and a balanced optical/electrical converter. Thus, the present invention can generate a high-quality radio-frequency electrical signal in which the noise components have been cancelled out.

Thus, the present invention can generate a high-quality radio-frequency electrical signal in which the noise components have been cancelled out.

In summary and for argumentative purposes, if there is a hypothetical combination of the *Chew et al., Trinh* and the *Kersey et al.* references. They would be incapable of disclosing or even suggesting the frequency converter and the balanced optical/electrical converter of the present invention under 35 U.S.C. §103.

> It is the Examiner's burden to establish *prima facie* obviousness. *See In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993) Obviousness requires a suggestion of all the elements in a claim *(CFMT, Inc. v. Yieldup Int'l Corp.,* 349 F.3d 1333, 1342 (Fed. Cir. 2003)) and "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). Here, we find that the Examiner has not identified all the elements of claim 1, nor provided a reason that would have prompted the skilled worker to have arranged them in the manner necessary to reach the claimed invention.
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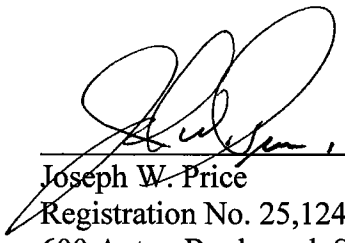
> *Ex parte* Karoleen B. Alexander, No. 2007-2698, slip op. at 6 (B.P.A.I. Nov. 30, 2007)

It is believed that the currently added new claims are both supported in the Specification and Drawings and more than adequately distinguished over the cited references.

If the Examiner believes that a telephone interview will help in the prosecution of this matter, the undersigned attorney can be contacted at the listed phone number.

Very truly yours,

SNELL & WILMER L.L.P.



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